




# The Garcia River Forest Forest Carbon Project: a CCAR case study



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# Presentation objectives




- California Climate Action Registry Forest Protocols
- Registering a Forest Carbon Project in California

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# CCAR development

- Rigorous 4-year stakeholder process
- Scientific peer review
- Public meetings
- Extensive history of government support




# Highlights

- October 13, 2001 - SB 527 establishes California Climate Action Registry (CCAR)
- September 7, 2002 - SB 812 directs CCAR to forest carbon project protocols built on four key principles – additionality, permanence, native species, and natural forest management
- August 4, 2004 – Board of Forestry and Fire Protection passes resolution supporting Forest Protocols
- October, 2004 – California Climate Action Registry board unanimously adopts the Forest Protocols.
- September, 2006 – AB 32 enacted. CARB to adopt CCAR protocols to maximum extent feasible and re-establishes key climate project principles in law.



# CCAR basics

- CCAR established a **standardized**, transparent, voluntary accounting system for GHG emissions and emission reductions
- Three tiered protocol structure
  - General reporting – multi-sector
  - Project – forests (SB 812) and methane digesters
  - 3<sup>rd</sup> party certification – approved for forests in June 07
- See [www.climateregistry.org](http://www.climateregistry.org)



# CCAR Forestry Protocols

- Quantify changes in forest carbon over time based on three project types
  - Conservation-based forest management
  - Forest conservation – avoided deforestation
  - Reforestation – tree planting
- Establish essential accounting platform
- 4-year stakeholder process

## Key climate principles

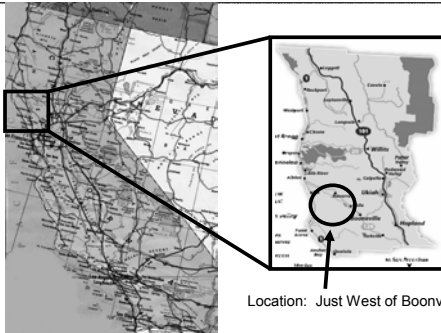
- Permanence – easement secures land base
- Baseline – CA Forest Practice Rules
- Additionality – exceeds business as usual
- Leakage – entity wide - avoid / minimize
- Ecologically beneficial – native forests
- Verification – 3<sup>rd</sup> party certification

## Consistent principles

- Kyoto protocol
- Regional Greenhouse Gas Initiative
- AB 32 - Sec. 38562(d)(1)
- AB 32 Market Advisory Committee report - pp 62-65

The principles apply to projects in all sectors  
We will need emission reductions from all sectors

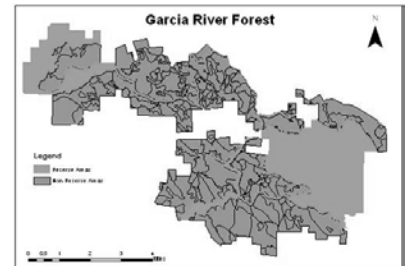
**Garcia River Forest**  
**Mendocino County, CA**



Location: Just West of Boonville, CA

## Garcia River Forest background

- 24,000 acre working forest
- Owned by TCF and managed in partnership with TNC, WCB & CCC
- History of intensive management
- Forest restoration
- CCAR Climate Change project
- DOE / Carbon research
- Biodiversity research & ecological reserves

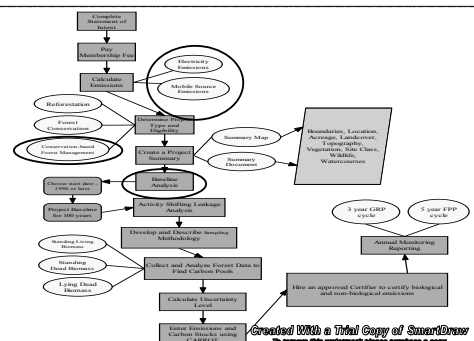


## Hypothesis

- Carefully planned timber harvest is compatible with protecting and restoring forest ecosystems
- Sustainable forestry can help stabilize the climate.



## CCAR Requirement Flowchart



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## Inventory methods

- What is the forest like today?
- 2004 color aerial photos
- 17 stand types, most are 40-50 years old dominated by tanoak in-growth
- Stratified sampling – 844 monumented inventory plots

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## Modeling methods

1. Expand data to cover full forest based on stand stratification and site index
2. Define project & baseline management regimes:
  - Project: Conservation Based Forest Management
  - Baseline: Maximum Allowable Harvest under FPR
3. Grow forest into the future (using models). The difference between these two regimes is the carbon sequestered as a result of the project.

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## Modeling methods: define management regimes

### Conservation Based Forest Management

- Treatment to reduce hardwood competition for tanoaks 4 – 20 inches DBH
- Light touch, single tree selection logging. Start in 2010, thin higher volume stands to increase growth and stocking over time retaining 120 ft<sup>2</sup> BA
- Continue to thin once every 15 years gradually increasing the residual BA to 180 ft<sup>2</sup>
- Only applied to non-reserve areas (15537 acres)

### Maximum Allowable Harvest

- No harvest on extended WLPZ buffer, owl site, TMDL
- Starting in 2006, clearcut the oldest 1/6 with CA FPR-C
- Continue every 5 years until all age classes have been cut.
- Re-enter stands after 60 years
- Cut on all unrestricted forested acres not just non-reserve area

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## GRF silviculture: light touch – single tree selection favors forest restoration over short term revenue

### current condition

Stand Visualization System

PRE\_HARV.SVS

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## GRF silviculture harvest to retain healthy trees

### year 0

Stand Visualization System

GROWTH\_HARV.SVS

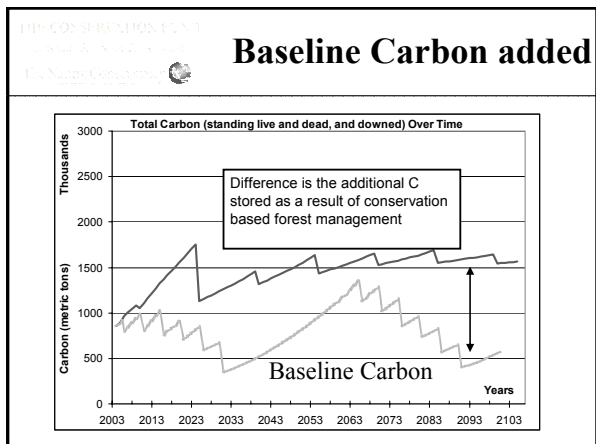
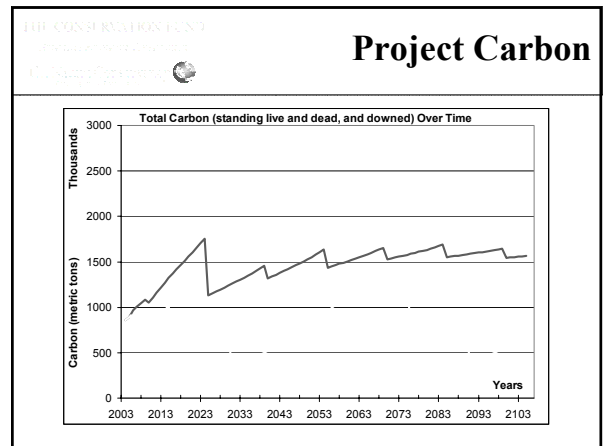
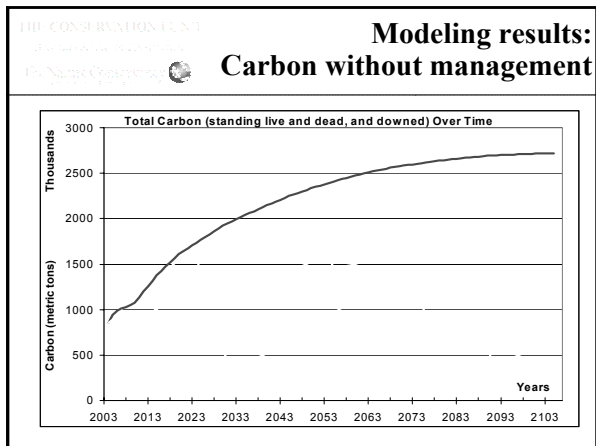
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## GRF silviculture

### condition at year 20

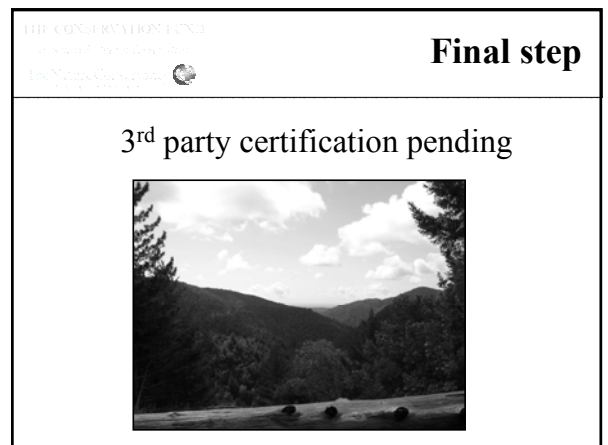
Stand Visualization System


GROWTH\_HARV\_20YR.SVS



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- ### Modeling results
- To get graph of total carbon, convert model output to metric tons of Carbon with CCAR equations.
  - Optional pools of below-ground and wood products pools will be added
  - Validation of FPS model with CRYPTOS (second model) showed agreement in estimates


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- ### Project registration
- Account for non-biological emissions (3<sup>rd</sup> party certified, entered in CARROT)
  - Project Summary Worksheet
    - Project location summary
    - Documentation of Project Permanence, Additionality, and meeting Native Species Requirement
    - Description of Baseline projection
    - Leakage Analysis – entity wide carbon projection
  - Complete the EXCEL CCAR Forest Reporting Forms



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Results

- Storing appx. 42,000 mtCO<sub>2</sub>e per year
- Equivalent of 7,600 passenger cars
- Important source of revenue for restoration and road rehabilitation
- At best, supplemental revenue stream that does not equal timber value

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Lessons learned

- CCAR forest protocols are a workable method to reliably measure changes in forest carbon
- They produce high-value, credible emissions reductions that are in demand on the voluntary market
- Adding CCAR requirements to standard inventory not significant increase in cost

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Lessons learned

- Initial results indicate hypothesis is true
- Consistent with TNC forest carbon projects in other parts of the world
- Our experience is favorable and we hope serves as a model for other forest landowners to address climate change.


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Conclusion

By adopting the protocols now, CARB will:

1. address global climate change
2. Provide certainty and encourage other landowners to undertake projects
3. enable the state to report real, early progress towards meeting the AB 32-mandated emission levels

CARB 2-phase process is reasonable & prudent

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Questions

